REMARKS

I. Amendments to the Claims

Claim 10, the only independent claim of this application, has been amended to recite that the claimed treatment of multiple sclerosis (MS) comprises administering to a patient in need thereof a therapeutically effective amount of a therapeutically effective anti-IL-17 antibody or anti-IL-17 antibody fragment. To the extent this language was recited in claims 13 and 17, these claims are now cancelled. Dependent claims 11, 12 and 18, are being withdrawn from consideration as being drawn to non-elected subject matter. The applicants expressly reserve the right to raise these claims in a subsequent application. Claims 14, 15, and 16 have been amended to depend from claim 10. Claim 19 is amended to include language consistent with amended claim 10.

II. Response to Rejections

This amendment is submitted in response to the office action mailed January 28, 2008. In that action, the elected pending claims 10-11, 13-17, and 19 of Group III were rejected under 35 U.S.C. 112, first paragraph, as being non-enabling for a method of treating MS comprising administering a therapeutically effective amount of an inhibitor of IL-17 activity to a patient in need thereof as recited in claim 10 (Office Action, pages 2-7), and under 35 U.S.C. 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention (Office action, pages 7-8). Each of these grounds of rejection is respectfully traversed, and each will be discussed in turn.

A. Enablement

The Office Action states that the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with the (unamended) claims. (Office Action paragraph 2a, page 2). The basis of the rejection appears to lie in the statement that "…the specification is non-enabling for the unlimited number of compositions comprising 'an inhibitor of IL-17 activity', and which are encompassed by the scope of the claims." (Office Action, page 3.) Claim 10, the only pending independent claim, has been amended to delete the language cited in the rejection and to recite treatment of MS by administering a therapeutically effective amount of an anti-IL-17 antibody or

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anti-IL-17 antibody fragment. The applicants respectfully submit that the specification enables the amended claims.

1. Amended Claim 10 is Supported by the Specification and the Cited Art

Anti-IL-17 antibodies and antibody fragments as now specifically recited in claim 10 are well known in the art, such as the references cited in the present specification, at e.g., page 1, line 22; page 8, line 25 - page 9, line 3; page 13, lines 4-7. The specification is also replete with other references in the literature that disclose how one skilled in the art would practice various aspects of the invention, e.g., library methods for obtaining candidate agents, page 5, lines 4-18; generation of antibodies against polypeptides, page 7, lines 12-13; preparation of monoclonal antibodies, page 7, lines 26-30; other methods of generating antibodies and antibody fragments page 8, lines 1-26; methods for conjugating effectors to antibodies, page 11, lines 12-15; methods for attaching antibodies to PEG moieties, page 12, lines 10, 17-23, 28-29; methods for attaching PEG to fragments, page 13, lines 20-32.

Anti-IL-17 antibodies and fragments and methods of making them were known in the art, as illustrated, by way of example, in:

- Yao et al., Journal of Immunology 1995 (recited in the specification) provides antibodies to IL-17 (by reference to another paper, Yao et al Immunity 1995, 3, 811-821).
- US 6,274,711 describe the cloning of IL-17, known at that time as CTLA-8 and the production of anti-IL-17 antibodies.
- Feretti (disclosed in the specification) refers in the materials and methods, second paragraph, to a neutralizing IL-17 antibody available from R+D systems. Neutralizing antibodies from R+D systems, Biosource and Serotec, were commercially available at the priority date of the present application.
- Chung (disclosed in the specification) describes production of polyclonal anti-IL-17 antibodies and the purification of a specific IL-17 antibody by affinity chromatography.

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- Kotake *et al.*, 1999, Journal of Clinical Investigation, 103, 9, 1345-52 use polyclonal anti-IL-17 antibodies obtained from R+D systems.

- Chabaud *et al.*, 2000, Cytokine, 12, 7, 1092-1099 also describes the use of anti-IL-17 mAbs.

The PTO and the Federal Circuit have acknowledged that the level of skill and knowledge in the art of antibodies is such that production of antibodies against a well-characterized antigen is conventional and disclosure of a specific antigen is sufficient to demonstrate possession of antibodies to it. *See* Examples 13 and 14 of the PTO's Written Description Guidelines, Rev. 1 (March 25, 2008) and *Noelle v. Lederman*, 355 F.3d 1343, 69 U.S.P.Q.2d 1508 (Fed. Cir. 2004), respectively

The Office Action did not discuss non-enablement with regard to any of the dependent claims. As claim 10 has been amended to include the limitations of previous claims 13 and 17, it is submitted that claim 10 is now enabled for this reason as well.

Furthermore, the claims are not directed to anti-IL-17 antibodies and fragments per se, the claims are directed to a method of treating MS by administering the recited therapeutically effective anti-IL-17 antibodies and fragments to patients in need of such treatment. Methods of administering a medicament to a patient, are disclosed in the specification at page 19, line 29-page 20, line 8; and administration of a medicament by gene therapy are disclosed at page 21, lines 30-33, page 22, lines 11, 13, 16-20, 26. The Action fails to state why the specification would not enable one skilled in the art to provide such *treatment* to a patient.

2. <u>The Amount of Experimentation Required Has Not Been Shown to be "Undue"</u>

A claim is enabled if all that is required is no more than routine experimentation to practice it. Indeed, even a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) (citing *In re Angstadt*, 537 F.2d 489, 502-04, 190 USPQ 214, 217-19 (CCPA 1976)). In the present case, the specification gives extensive guidance on anti-IL-17 antibodies and fragments, methods of making them, and methods of administering

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them. In addition, the present specification demonstrates positive results in treatment in an *in vivo* MS mouse model, thereby demonstrating that methods of treating MS with an anti-IL-17 antibody are enabled. Thus any experimentation that would be necessary to obtain anti-IL-17 antibodies or fragments, and to demonstrate their effectiveness in the treatment of MS such as by an *in vivo* MS mouse model, would be routine. The Office has not demonstrated that "undue experimentation" would be required to produce anti-IL-17 antibodies or fragments thereof and use them in the treatment of MS.

The Examiner's allegations regarding the quantity of experimentation that might be necessary to determine "which other IL-6 antagonists to be administered are encompassed by the scope of the claims" and that the claims "encompass every and all IL-6 antagonist" (both at Office action page 5) are respectfully not understood and are inapplicable, as the claims relate to anti-IL-17 antibodies and fragments, not IL-6 antagonists.

Applicants respectfully traverse the suggestion that the Chuntharapai et al. reference cited in the Action is illustrative of the state of the art at the time of the invention. Rather, the state of the art is more aptly disclosed in the many references cited in the application and noted above. Moreover, the reference relates to the IL-8 receptor, not IL-17 or the IL-17 receptor. The IL-8 receptor discussed in the Chuntharapai et al. reference is a very different protein and much more difficult to obtain antibodies to than the soluble cytokine IL-17. Nevertheless, even this reference describes that antibodies were obtained. Chuntharapai *et al.* provides no evidence that it would require more than routine experimentation to produce IL-17 inhibiting antibodies and fragments, or use them in the treatment of MS. Indeed, the art cited and discussed in the present specification and discussed above demonstrate to the contrary. Given the state of the art, it would require only routine experimentation for one skilled in the art to obtain antibodies to IL-17 and use them in the treatment of MS, and the reference does not suggest otherwise.

In view of the disclosure in the specification of (1) anti-IL-17 antibodies and antibody fragments, (2) methods for making and using the antibodies and fragments, and (3) methods for determining if the anti-IL-17 antibodies and fragments are therapeutically effective against MS, and further in view of the ample literature references cited, those skilled in the art would require only routine experimentation to practice the invention as now claimed.

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3. The Invention Need Not Be Limited to the Working Examples

The methods taught in the specification are not limited to those at pages 26-30. On the contrary, the body of the specification discloses methods, and contains citations to other methods as noted above. And as the Action acknowledges, methods of making such antibodies are well-known in the art.

The Office Action suggests that the only aspect of the present invention that is enabled is that which is set forth in the specific working example: "The specification delimits the instant method to administering antibody Ab#13 mIgG1" (Office action page 2), and "The specification only enables a method for reducing the incidence and severity of the relapse phase in multiple sclerosis …wherein the antibody administered is Ab#13 mIgG1 antibody…." (Office action page 4).

Such a narrow view of enablement is contrary to both established case law and the MPEP. As stated in MPEP 2164.02, "Compliance with the enablement requirement of 35 U.S.C. 112, first paragraph, does not turn on whether an example is disclosed." The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation. *In re Borkowski*, 422 F.2d 904, 908, 164 USPQ 642, 645 (CCPA 1970).

It is well established law that the scope of enablement must only bear a "reasonable correlation" to the scope of the claims. See, e.g., *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). Yet here the Office is requiring not a "reasonable correlation" between the scope of enablement and the scope of the claims, but an *exact* correlation, a requirement that has no basis in law.

And as explained in section II.A.2, above, the method taught in the working examples will enable one of ordinary skill in the art to select anti-IL-17 antibodies and fragments that are therapeutically effective against MS and use them in the treatment of MS.

4. Claim 10 is not a "single means" claim

The Examiner's characterization of claim 10 as a "single means claim" is respectfully traversed. In any event, as claim 10 as amended now recites a method of treating MS by

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administering anti-IL-17 antibodies and antibody fragments. It is respectfully submitted that the "single means" rejection is inapplicable to the presently amended claims.

The examiner's statement that the disclosure is limited to the relapse phase (Office Action pages 4, 6) is respectfully traversed. A significant delay in the onset of the acute phase is disclosed at least at Figures 1, 2, and 8, and at page 25, lines 1-3, 31-37; page 26, lines 1-3; page 28, lines 30-32.

In view of the foregoing, it is respectfully submitted that claim 10 as amended is enabled. The remaining dependent claims, which are necessarily of narrower scope than claim 10, are therefore also enabled. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. 112, first paragraph, for lack of enablement be withdrawn.

B. Definiteness

In reviewing a claim for compliance with 35 U.S.C. 112, second paragraph, the examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent. See, e.g., *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1379, 55 USPQ2d 1279, 1283 (Fed. Cir. 2000).

The essential inquiry pertaining to this requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. Definiteness of claim language must be analyzed, not in a vacuum, but in light of:

(A) The content of the particular application disclosure;

(B) The teachings of the prior art; and

(C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

MPEP 2173.02

1. Amended Claim 10 Is Not Vague and Indefinite

In the present case, amended claim 10, when considered as a whole in view of the specification, the teachings of the prior art, and the level of ordinary skill in the art, meets the requirements for definiteness under the statute. Those skilled in the art are on sufficient notice as

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to what is being claimed, namely, a method of treatment of MS by administering an effective amount of a therapeutically effective anti IL-17 antibody or antibody fragment.

The Examiner asserts that the claims are indefinite because it is unclear which IL-17 activities are inhibited. It is respectfully submitted that this ground of rejection is now moot.

The Examiner's statement that claim 10 is indefinite because it fails to recite method steps (Office Action page 7) is specifically not understood because claim 10 recites the step of "administering" the recited antibodies or antibody fragments. Modes of administration are discussed in the specification at page 18, line 1 – page 23, line 9.

With regard to claim 16, the Examiner's statement that the metes and bounds of the term "effector molecule" are unclear (Office action page 8) is respectfully traversed. Effector molecules are known in the art and discussed in the specification at page 10, line 10 – page 12, line 3. While the Examiner suggests that the claim be limited to those effector molecules "for which there is basis in the instant specification", applicant respectfully submits that in view of the thorough disclosure as to what is meant by the term "effector molecule," the use of "effector molecule" in the claim is sufficient notice to those skilled in the art as to what is being claimed, which is all that the statute requires.

With regard to claim 19, the Examiner's statement that the metes and bounds of the term "therapeutically active compound" are unclear (Office action page 8) is respectfully traversed. Known therapeutically active compounds that are currently licensed are discussed in the specification at page 2, line 27 – page 3, line 10. While the Examiner suggests that the claim be limited to those therapeutically active compounds "for which there is basis in the instant specification", applicants respectfully submit that in view of the disclosure of currently licensed therapeutically active compounds, the use of that term in the claim is sufficient to put those skilled in the art on notice as to what is being claimed. Further, because this dependent claim merely recites that such other therapeutically active compounds can be used in conjunction with the administration of the specifically recited IL-17 binding antibodies and fragments, there is no reason to limit such therapeutically active compounds to those that were licensed for such use at the time the original priority document for this application was filed.

Each of the dependent claim elements of modes of administration, effector molecules, and other therapeutically active compounds are well known in the art "[N]ot everything

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necessary to practice the invention need be disclosed. In fact, what is well-known is best omitted." *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991). It is thus respectfully submitted that the pending claims are not impermissibly vague or indefinite.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the grounds of rejection have been overcome, and a Notice of allowance is requested.

Respectfully submitted,

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